

AMENDMENT

Please change the title of the invention to read:

--DUAL FUNCTION GLYCOPROTEIN HORMONE COMPOSITIONS--

In the Specification:

On page 1, please delete lines 8-10.

In the Claims:

Please replace the presently pending claims with the following claims:

1. (Amended) A method to provide a subject with different glycoprotein hormone activities which method comprises administering to a subject in need of said activities a composition of the formula:

$\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1$ (1); or

$\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2$ (2)

wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

" α " has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

" \approx " is a noncovalent link between α and β^2 ;

m is 0 or 1;

wherein each of β^1 and β^2 confer a different activity on said composition, with the proviso that if β^1 is CG β then β^2 is not FSH β .

2. (Amended) The method of claim 1 wherein β^1 and β^2 are native β subunits.

3. The method of claim 1 wherein β^1 and β^2 exhibit different biological half-lives.

5. The method of claim 1 wherein said subject is in need of enhanced fertility.

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6. (Amended) The method of claim 5 wherein
both β^1 and β^2 confer FSH agonist activity on said composition; or
both β^1 and β^2 confer CG agonist activity; or
both β^1 and β^2 confer LH antagonist activity; or
one of β^1 and β^2 confers FSH agonist activity and the other confers LH antagonist
activity or lowered LH agonist activity; or
one of β^1 and β^2 confers FSH agonist activity and the other confers CG agonist activity;
or
one of β^1 and β^2 confers LH antagonist activity or lowered LH agonist activity and the
other confers CG agonist activity.

10. (Amended) The method of claim 9 wherein
one of β^1 and β^2 confers FSH agonist activity and the other confers LH antagonist
activity or lowered LH agonist activity on said composition; or
both β^1 and β^2 confer FSH agonist activity; or
both β^1 and β^2 confer LH antagonist activity.

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11. (Amended) A glycosylated or nonglycosylated composition of the formula
 $\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1$ (1); or
 $\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2$ (2)
wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate
glycoprotein hormone, or a variant thereof;
“ α ” has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or
a variant thereof;
“linker” is a linker moiety; and
“ \approx ” is a noncovalent link between α and β^2 ;
m is 0 or 1;
wherein each of β^1 and β^2 confer a different activity on said composition; and
with the proviso that if β^1 is CG β then β^2 is not FSH β .

12. (Amended) A pharmaceutical composition which regulates the glycoprotein hormone concentrations in a mammal which comprises an effective amount of the composition of the formula

$$\beta^2 \approx \alpha\text{-(linker)}_m\text{-}\beta^1 \quad (1); \text{ or}$$

$$\beta^1\text{-(linker)}_m\text{-}\alpha \approx \beta^2 \quad (2)$$

in admixture with at least one pharmaceutically acceptable excipient; and

wherein each of β^1 and β^2 has the amino acid sequence of the β subunit of a vertebrate glycoprotein hormone, or a variant thereof;

" α " has the amino acid sequence of the α subunit of a vertebrate glycoprotein hormone or a variant thereof;

"linker" is a linker moiety; and

" \approx " is a noncovalent link between α and β^2 ;

each of m and n is independently 0 or 1;

wherein each of β^1 and β^2 confer a different activity on said composition; and

with the proviso that if β^1 is CG β then β^2 is not FSH β .

Please add the following claims:

21. (New) The composition of claim 11, wherein β^1 is FSH β or a variant thereof and β^2 as FSH β or a variant thereof.

22. (New) The composition of claim 11, wherein β^1 is LH β or a variant thereof and β^2 as LH β or a variant thereof.

23. (New) The composition of claim 11, wherein β^1 is TSH β or a variant thereof and β^2 as TSH β or a variant thereof.

24. (New) The composition of claim 11, wherein β^1 is CG β or a variant thereof and β^2 as CG β or a variant thereof.

25. (New) The composition of claim 11, wherein one of β^1 and β^2 is FSH β and the other is LH β .

26. (New) The composition of claim 11, wherein one of β^1 and β^2 is FSH β and the other is TSH β .

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cont 27. (New) The composition of claim 11, wherein one of β^1 and β^2 is LH β and the other is TSH β .

28. (New) The composition of claim 11, wherein one of β^1 and β^2 is LH β and the other is CG β .